

Date: Wednesday, 3/26/2008 1:26:39 PM  
 User: Kim Johnston

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : ROUND BILLET 17-4
Job Number : 38213	
Estimate Number : 10042	
P.O. Number :	Part Number : D6104009
This Issue : 3/26/2008 S.O. No. :	Drawing Number : D6104 REV A <i>AB</i>
Prsht Rev. : NC	Project Number : N/A
First Issue : 1/1 Type : MACHINED PARTS	Drawing Revision : <i>AB</i> <i>08/03/26</i>
Previous Run :	Material :
Written By : <i>08 03 26</i>	Due Date : 4/4/2008 Qty: 10 Um: Each
Checked & Approved By : <i>08 03 26</i>	
Comment : Est. A: 02.07.11 New Issue KJ	

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	PG	PURCHASING
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Comment: PURCHASING

Issue P/O: *5994**08/03/26*

a) Description: S.S round billet

b) Ø5.25" x 4.100" long

c) Tolerance on all dimensions are +0.030"/-0.000"

d) Material: 17-4PH Stainless steel

e) Material certification required

*(10)*

2.0	D6104009P	17-4 SS Roundbar 5.25"OD
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Comment: Qty.: 1.0000 Each(s)/Unit Total : 10.0000 Each(s)  
 17-4 SS Roundbar 5.25"OD

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Receive &amp; Inspect For Transit Damage

Ensure material certification is attached

*08/04/12* *(10)*

4.0	QC6	DIMENSIONAL CHECK
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Comment: DIMENSIONAL CHECK

Ensure Material certification comply to Dwg D6104

*08/04/12**(10)*

5.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: \_\_\_\_\_

*08/04/12**(10)*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Wednesday, 3/26/2008 1:26:39 PM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ROUND BILLET 17-4

Job Number: 38213

Part Number: D6104009

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

QC21

FINAL INSPECTION/W/O RELEASE



08/04/15

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



mf 08-04-15

10/10/08

10/10/08

10/10/08

10/10/08

10/10/08

10/10/08

10/10/08

10/10/08

10/10/08

10/10/08

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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**NOTE:** Date & initial all entries

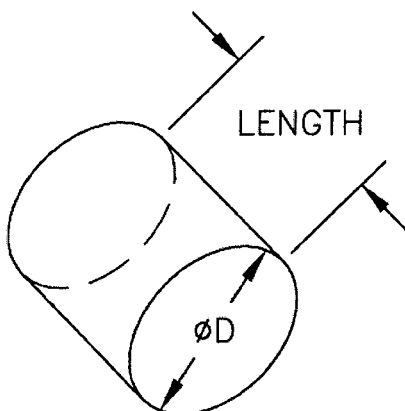


DESIGN FF	DRAWN BY 	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 	APPROVED 	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29

## SPECIFICATION CONTROL DRAWING



MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
→ D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 38213

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**VALBRUNA**

**SLATER STAINLESS, INC.**  
 2400 Taylor Street West, P.O. Box 630  
 Fort Wayne, Indiana USA 46801  
 Phone: 260-434-2892 Fax: 260-434-2905

**Product Certification Report****Report Number: 4259400**

609771

Certified on Feb 26, 2007 Page 1 of 1

Order I.D. <b>0700005 014</b>		Order Date <b>1/02/07</b>		Commodity Code	
Dim 1 <b>5.2500</b>	Dim 2 <b>.0000</b>	Dim 3 <b>.0000</b>	Heat I.D. <b>418929</b>	Customer I.D. <b>002476</b>	Customer Purchase Order <b>612001744</b>
Product Shape <b>Rounds</b>			Product Surface <b>HR &amp; Rough Turned</b>		Customer Grade <b>630</b>
Length (Inches) <b>132.000 Min. 156.000 Max.</b>			Bill of Lading # <b>405015</b>	Weight	

**Ship To**

Attention: KEVIN MACNEIL  
**VALBRUNA CANADA LTD.**  
**8724 HOLGATE CRESCENT**  
**MILTON, ONTARIO L9T5Z1**

**Sold To**

**VALBRUNA CANADA LTD.**  
**8724 HOLGATE CRESCENT**  
**MILTON, ONTARIO L9T5Z1**

**Lifts: 0060****CONDITION A****EN 10204 3.1B****UNS S17400****ASTMA 564-04****ASMESA 564 01 ED 2002 ADD****AMS 5643Q****CHEMICAL ANALYSIS**

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.038	.69	.022	.022	.37	15.57	4.71	.16	3.35	.05	.26	.001	.26

**HB****341****TENSILE PROPERTIES CAPABILITY**

HB	TS (PSI)	.2%YS (PSI)	%EL(2")	%RA	AGE(F)
428	204000	184900	15.4	53.3	900

**MAGNETIC PARTICLE TEST****FREQ SEV****AVG .07 .05****MACRO ASTM E340/E381****MACRO****OK****OK****OK****PERCENT FERRITE****% FERRITE****AVG .5**

No welding or weld repair done.

Material when shipped is free from contamination by mercury, radium, alpha source, and low melting elements.

Melted in Italy per DFARS clause 225.872.

Chemical testing performed to one or several of the following ASTM methods: E415, E572, E1019, E1085, E1086.

No mercury or low melting alloy contamination. No weld repair.

Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications.

Quality system is compliant with ISO 9001:2000. Produced in accordance with EN 10204 3.1B.

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

**ELECTRALLOY**

175 Main Street  
Oil City, PA 16301  
PHONE: 814-678-4200  
Fax: 814-678-4146

**MATERIAL CERTIFICATION  
REPORT and CERTIFICATE  
OF QUALITY CONFORMANCE**

63181

Zpf

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CUSTOMER NAME AND ADDRESS

ASA Alloys, Inc.  
81 Steinway Boulevard  
Etobicoke, Ontario M9W 6H6  
Canada

CUSTOMER ORDER NO. 068331-CV  
IDENTIFICATION Heat #45730

**PRODUCT DESCRIPTION** Stainless steel bar, electric arc furnace melted, A.O.D. refined  
press forged, solution annealed, water quenched, bar peeled,  
with saw cut square ends

SPECIFICATIONS

Type 17-4 (UNS S17400) - ASTM A564/A564M-04, AMS 5643Q, ASTM A705/A705M-95,  
Grade 630 ASME SA-564/SA-564 2004 Edition ASTM A484/A 484M-06b,  
ASME SA-705/SA-705M 2004 Edition, NACE MR0175/ISO 15156-3:2003 (E).  
and any additional specifications which may be  
listed below.

CHEMICAL ANALYSIS

Heat Number	C	MN	P	S	SI	CR	NI	MO
45750	0.044	0.59	0.019	0.001	0.56	15.34	4.55	0.16
	CU	CB	TA	CBTA	N	CO	V	
	3.31	0.30	0.01	0.31	0.036	0.03	0.04	

ITEM DESCRIPTION

Heat Number	HWRR	Quantity & Weight	Size
45750-2A		1 Bar - 1,870 Lbs	Nom 6.50" Rd x 195.93" Lg

BRINELL/ROCKWELL

Heat Number	Test Loc	Brinell
45750-2A	TOP	341

PASS/FAIL TESTS

Heat Number	Macro Etch								
45750-2A	P								

Note: The recording of false, fictitious, or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute.

The above are true and correct results of tests on samples of the material. Results conform to the specification(s) listed above and are on record.

Meets EU Electrical "RoHS".  
Contains NO "WEEE" relevant substances.  
Complies with DFARS-225.1-Buy American Act-Supplies.

By

Date: 03/07/08

HWRR = Minimum Hot  
Working Reduction  
Ratio.

Name : David A. Fulkerson

Title: QC Technician/Works Inspector

**ELECTRALLOY**

175 Main Street  
Oil City, PA 16301  
PHONE: 814-678-4200  
Fax: 814-678-4146

**MATERIAL CERTIFICATION  
REPORT and CERTIFICATE  
OF QUALITY CONFORMANCE**

This document shall not be reproduced, except in full,  
without the written approval of Electralloy

<b>CUSTOMER NAME AND ADDRESS</b> ASA Alloys, Inc. 81 Steinway Boulevard Etobicoke, Ontario M9W 6H6 Canada	<b>CUSTOMER ORDER NO.</b> 068331-CV <b>IDENTIFICATION</b> Heat #45730
<b>PRODUCT DESCRIPTION</b> Stainless steel bar, electric arc furnace melted, A.O.D. refined press forged, solution annealed, water quenched, bar peeled, with saw cut square ends.	

**CAPABILITIES ANALYSIS FOR CONDITION: H900**

**TENSILE PROPERTIES**

Heat Number	Test Dir	Test Loc	Tensile (PSI)	.2% Yield (PSI)	Reduction (%)	Elong 4D (%)
45750-2A	LT	TOP	199200	176240	45.1	13.3

**BRINELL/ROCKWELL**

Heat Number	Test Loc	Brinell
45750-2A	TOP	415

**MICRO-STRUCTURE**

Heat Number	Spher (%)	Decarb (In)	Ferrite (%)
45750-2A	N/A	N/A	0.00

**STATEMENTS**

Material represented was melted and manufactured in the USA

All items represented are in full compliance with all purchase order and specification requirements.

At time of shipment, items and/or material produced under this order have not come in contact with mercury or its compounds.

Material represented was not weld repaired.

Note: The recording of false, fictitious, or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute.

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Meets EU Electrical "RoHS".

Contains NO "WEEE" relevant substances.

Complies with DFARS-225.1-Buy American Act-Supplies

By

Date: 03/07/03

**HWRR** = Minimum Hot

Working Reduction  
Ratio.

Name : David A. Fulkerson

Title: QC Technician/Works Inspector